CD133+ neural stem cells in the ependyma of mammalian postnatal forebrain.

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Public Summary:
The postnatal forebrain subventricular zone (SVZ) harbors stem cells that give rise to olfactory bulb interneurons throughout life. The identity of stem cells in the adult SVZ has been extensively debated. Although, ependymal cells were once suggested to have stem cell characteristics, subsequent studies have challenged the initial report and postulated that subependymal GFAP(+) cells were the stem cells. Here, we report that, in the adult mouse forebrain, immunoreactivity for a neural stem cell marker, prominin-1/CD133, is exclusively localized to the ependyma, although not all ependymal cells are CD133(+). Using transplantation and genetic lineage tracing approaches, we demonstrate that CD133(+) ependymal cells continuously produce new neurons destined to olfactory bulb. Collectively, our data indicate that, compared with GFAP expressing adult neural stem cells, CD133(+) ependymal cells represent an additional-perhaps more quiescent-stem cell population in the mammalian forebrain.

Scientific Abstract:
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